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COLONY OF MAURITIUS

Annual Report of the Department of Agriculture for 1935.

Printed by R. W. Brooks, Government Printer, Port Louis, 1936.

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CONTENTS

PAGE

Part I

General Report on the Agricultural Conditions of the Colony and the work of the Department of Agriculture during 1935. ... 1

Part II

Report of the Sugarcane Research Station 14

„ Agricultural Division 19

„ Botanical Division 23

„ Sugar Technological Division 27

„ Veterinary Division 28

„ Entomological Division 30

„ Chemical Division 33

„ Tobacco Division 37

„ Government Dairy 39

„ Co-Operative Credit Division 42

„ Rodrigues 44

Part III

Staff Movements 48

Stations 49

Expenditure and Revenue 49

Legislation 50

Board of Agriculture 51

Publications 51

General 53

Appendix 54

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Annual Report of the Department of Agriculture for 1935

No. 240/35.

The Honourable the Colonial Secretary,

I have the honour to submit the report on the Agricultural conditions of the Colony and the work of the Department of Agriculture for the year 1935.

PART I

GENERAL REPORT ON THE AGRICULTURAL CONDITIONS OF THE COLONY AND THE WORK OF THE DEPARTMENT OF AGRICULTURE DURING 1935.

1. *Meteorological conditions*

In so far as weather conditions have been concerned, the year 1935 was an exceptionally favourable one for the Sugar Industry of Mauritius. Temperature was generally above normal while rainfall was copious and, what is more, well distributed. Two cyclones threatened danger : one on January 27th and another on February 28th ; but, in both cases, these disturbances passed at a safe distance from the Island and no winds of destructive violence were experienced.

The following figures indicate the temperature and rainfall conditions as observed at the Central Experiment Station, Réduit. More extensive information in this respect is given in the Appendix.

TABLE I

Station : Department of Agriculture, Réduit

Months and Years	Air Temperature °C	Departure from normal °C	Rainfall m/m	Departure from normal %
1934				
November	21.8	+0.1	162.2	+ 208
December	24.0	+0.7	81.1	− 41
1935				
January	24.3	+0.2	342.5	+ 30
February	24.4	+0.1	376.7	+ 36
March	24.0	+0.3	146.5	− 53
April	22.8	+0.2	427.8	+ 288
May	20 4	−0.1	54.8	− 45
June	19.3	+0.7	93.3	+ 5
July	17.5	−0.4	103.0	+ 46
August	18.4	+0.5	52.3	− 1
September	18.9	+0.3	53.4	+ 15
October	20.4	+0.6	28.3	+ 5
November	22.1	+0.4	214.1	+ 307
December	23.6	+0.2	207.1	+ 51

2. *Sugar production*

As a result of the unusually propitious weather, the sugar out-turn attained the record figure of 280,500 metric tons of sugar extracted from 2,501,529 metric tons of cane. The next best figure was recorded in 1914, with 277,300 metric tons of sugar extracted from 2,577,140 metric tons of cane. In view of the fact that the area under cane was, in 1935, about 20% below the area cultivated in 1914, the figure realized indicates a high standard of work both in the field and in the factory.

The following table exhibits the comparative production for the past seven years:—

TABLE II

Yields of Sugar in thousand metric tons.

Districts	1935	1934	1933	1932	1931	1930	1929
P/plemousses and Riv. du Rempart	69.97	30.13	57.77	62.73	41.81	43.00	54.68
Flacq	44.15	30.87	41.37	35.97	27.91	37.81	38.91
Moka	35.76	29.30	40.08	34.12	20.83	32.10	35.97
Plaines Wilhems ...	20.62	11.54	18.22	17.05	11.64	14.62	15.66
Black River ..	11.28	5.99	8.88	9.06	6.29	9 81	9.22
Grand Port ...	53.38	38.37	50.66	46.66	28.52	46.53	47.18
Savanne ...	45.34	32.66	44.48	41.63	27.01	37.09	36.41
Total ...	280.50	178.86	261.46	247 22	164.01	220.96	238.03

The figure for 1931 evinces a reduction, estimated at 34%, due to a severe cyclone. In 1932, a moderate cyclone, passing centrally on the island, caused a reduction estimated at 7%. In 1934, there was a severe drought.

3. *Grades of Sugar*

The proportion of Raws was, this year, 85.03% of the total sugar production; vesous were 14.63%, while low sugars approximated to 0.34%. The change brought about by the introduction of the new English tariff in 1928 is well illustrated in the following table.

TABLE III

Years	Vesous %	Raws %	Lows %
1925 ...	98.21 ...	... ...	1.79
1926 ...	98.10 ...	... ...	1.90
1927 ...	98.63 ...	... ...	1.37
1928 ...	71.80 ...	27.30 ...	0.90
1929 ...	23 90 ...	75.20 ...	0.90
1930 ...	16.80 ...	82.50 ...	0.70
1931 ...	16.20 ...	83.10 ...	0.70
1932 ...	12.10 ...	87.50 ...	0.40
1933 ...	11.80 ...	87.70 ...	0 .50
1934 ...	20.56 ...	78.76 ...	0.68
1935 ...	12.60 ...	87.10 ...	0.30

4. *Area under Sugar Cane*

At the beginning of 1935, the area under cane was estimated at 138,369 acres—a figure practically the same as the one for the year previous. Estates with factory cultivated 61,1[illegible]0 acres; estates without factory 36,789 acres, giving a total estate cultivation of 97,979 acres or 293 acres above last year's figure. The balance of 40,330 acres was cultivated mostly by Indian peasant proprietors.

5. *Sugar Market*

The average net price for the crop reaped in 1934 approximated to Rs. 6.06 per 50 kilos, including extra colonial preference. For 1935, the average net price realized so far (February 1936) is about Rs. 5.82 per 50 kilos (257,656 metric tons having been sold).

Owing to the slump in the sugar market, the Secretary of State for the Colonies consented to a partial remission of loan repayments for this year so long as the average sale price for the year did not exceed 10/6 c.i.f. London. It is unlikely that this price will be realized.

6. *Disposal of the 1934–35 Sugars*

The total quantity of sugar exported during the 1934–35 year (August 1st, 1934 to July 31st, 1935) was 166,040 metric tons, distributed as follows:

Great Britain	...	158,726	metric tons
Canada	...	6,401	„
Hong Kong	...	681	„
Other Places	...	232	„
Total	...	166,040	

The exportation for 1935–36, up to the end of December 1935, was as follows:

Great Britain	...	93,253	metric tons
Canada	...	31,531	„
Hong Kong	...	51	„
Other Places	...	118	„
Total	...	124,953	

or more than twice the amount for the corresponding period last year.

The local consumption of sugar for the 1934–35 year, was 11,211 metric tons as against 10,381 for the year previous and 9,111 for 1932–33.

7. *Labour*

No special difficulties were experienced during the year in regard to labour, although the harvested crop was the heaviest on record.

The cost of living evinced a tendency to rise, but the price of the more common food stuffs remained well below pre-war standards.

8. *Sugar Machinery*

Machinery to the value of Rs. 438,588 was imported during the year as against Rs. 397,700 last year ; neither tractor parts nor ploughs were imported in 1935. Tramway material to the value of Rs. 194,666 was imported as compared with Rs. 280,557 last year.

9. *Fertilisers.*

The importation of fertilisers in 1935 totalled 15,589,852 kilos. valued at Rs. 1,751,425 as compared with 14,970,515 kilos, valued at Rs. 1,807,097 in 1934.

10. *Insect Pests*

With regard to *Phythalus Smithi.* Arrow., the major enemy of sugar cane plantations in Mauritius, no new centre of infestation was recorded though in certain localities the general spread of the pest proceeds. The campaign against this insect continues with unabated vigour ; the Phytalus Investigation Officer, Mr. W. F. Jenson, B.Sc., A.R.C.S. journeyed during the course of the year to Java, the Malay States and the Philippines and made a thorough investigation of the possibilities of supplying fresh enemies for Phythalus. In all 14 new species of parasites were shipped and liberated. Of these 4 species have already established themselves in Mauritius.

The Coconut Scale, *Aspidiotus destructor.* Sign has assumed senior status as a pest. In the report of the Assistant Entomologist an interesting account is given of methods which have been tried with a view to ensuring the control of this insect. The Department is now in correspondence with various centres abroad with the object of securing effective Coccinellid (Ladybird) parasites of this scale, especially those which have given such excellent results in Fiji and elsewhere.

A further interesting feature has been the promising control method attained by banding fruit and ornamental trees. The prominent pest known as *Icerya Seychellarum*, West will thus, it is hoped, be checked Its attacks cause grave damage at present.

The Assistant Entomologist has been engaged on a comprehensive survey of the Termite (Wood Ant) position in the Island ; the results, which are of interest and value, will be published shortly in the form of a Bulletin.

11. *Plant Diseases*

The Botanical Division has contributed further useful work in the suppression of existing diseases and in the prevention of plant parasites not yet known in Mauritius but which might be inadvertently introduced. Thus, the Mosaic disease of sugar cane, although known to exist in the neighbouring and nearby Island of Réunion, has been kept out of Mauritius despite the existence of considerable traffic between the two centres.

The diseases of tobacco have occupied a good deal of the attention of the division and it is worthy of note that the presence of an apparently new disease, which causes grotesque abnormalities of growth in the leaf, was rapidly dealt with.

A side line of interest has been the examination of weed control methods in lawns. Co-operation with the S. R. S. has been maintained in connection with the disease resistance of newly produced sugar cane seedlings.

12. *Tobacco Industry*

During the year under review, the Tobacco Board issued certificates for the cultivation of 404 acres, as compared with 1,080½ acres for the previous year. This reduction was rendered necessary by the accumulated stocks of unsold leaf at the Government Tobacco Warehouse. The acreage registered was not fully planted owing to unfavourable conditions in certain areas; the actual area taken up was 394½ acres, as compared with 921 acres in the previous year. On the whole, conditions were generally favourable but late rains caused secondary growth in late plantations and, whilst increasing yields, the quality suffered. The amount of leaf purchased by the Warehouse during 1935 was 275,710 kilos of a value of Rs. 268,321.29 cts, as compared with 461,881.5 kilos of a value of Rs. 541,402.78 cts. in the previous year.

The temporary difficulties in relation to the sale of leaf to local manufacturers, referred to in my report for 1934, were over come during the year and a system of selling by contract instituted which appears to give satisfaction to the manufacturers. The amount of local tobacco used by manufacturers was 300,148 kilos as compared with 302,732 kilos during the previous year.

Attention is still being directed towards export as no extension of the industry can take place unless such is found. The seven tons of flue cured and air cured leaf, which were forwarded to London during 1934, were ultimately returned to Mauritius during the year under review as being of a flavour unsuitable for the home market. After it was returned to Mauritius an inquiry was received from a further firm of brokers as to where Mauritius leaf could be obtained in commercial quantities. In view of this, a further small trial shipment is to be forwarded and for which sale is guaranteed. At the same time trials with other varieties are being pushed forward in an endeavour to obtain a variety or varieties with a more suitable flavour.

The Tobacco Breeding Officer has continued investigations with Blackshank resistance, selection work, etc, and his report is published as an annexure to the report of the Tobacco Board.

13. *Aloe Fibre*

Except for a slight recovery, in September and October, market conditions remained very poor throughout the year. The total exported in 1935 was 446 metric tons as against 670 in 1934.

During the early months of the year, the factory of the Mauritius Spinning and Weaving Cy closed its doors and, at the present time, there is no particular prospect of the manufacture of fibre bags being resumed.

14. *Pineapple Industry*

There is some small extension of the area under cultivation. The Canning Factory is still, however, far from being able to work on full load although prospects appear somewhat better; the production in 1934-35 was 2,188 cases of canned fruit valued at Rs. 16,404.

Figures for previous years are as follows:—

Years		Cases of Canned fruit
1931-32	...	1,224
1932-33	...	4,982
1933-34	...	2,300
1934-35	...	2,188

It is hoped to reach about 5,000 cases in 1935-36, owing to the exceptionally favourable weather experienced.

15. *Tea Industry*

Efforts towards further progress in this industry are being maintained. The production at Curepipe (Corson) Tea Estate for the past five years was as follows:—

Years		Kilos
1931	...	8,713
1932	...	8,688½
1933	...	12,251½
1934	...	13,425½
1935	...	12,600

At Bois Chéri Estate, the yield has been as follows:—

Years		Kilos
1932-33	...	9,500
1933-34	...	10,000
1934-35	...	27,880½

16. *Coconut Industry*

The export of copra during the year amounted to 1,746 tons of a value of Rs. 217,985 as against 1,565 tons, valued at Rs. 161,687 in 1934. The export of coconut oil during the year was 2,652 litres, valued at Rs. 906 as compared with 15,324 litres valued at Rs. 3,653 in 1934.

17. *Alcohol*

The total quantity of alcohol distilled for human consumption amounted to 539,361 litres as against 510,232 litres the year previous. The quantity distilled for industrial purposes was 360,670 litres, as against 441,620 litres in 1934.

The exportation of rum during the year was 18,155 litres, valued at Rs. 5,299 as against 35,325 litres valued at Rs. 10,177 in 1934.

18. *Veterinary and Livestock*

Interest in cattle breeding and management continues to awaken but there is still plenty of room for further development. At the beginning of 1935 the horned cattle on estates totalled 14,615 head as compared with 14,247 at the beginning of 1934. This increase bears entirely on milch cattle or cattle in herds (as opposed to draught oxen); motor transport continues to expand and, by doing so, automatically decreases the number of burden cattle. Cattle importation from Madagascar and other places amounted to 4,406 heads; of these 4,403 were imported from Madagascar for beef and 3 from elsewhere for other purposes.

An extensive examination of bovines was carried out during the year with a view to determining the status of *T. vivax*. It appears that the existence of this parasite is widespread throughout the Island. So far, treatment with tartar emetic has, in the opinion of the Government Veterinary Surgeon, given satisfactory results. The efficiency of other treatments is under investigation.

The successful cure by means of Naganol, of two equines, proved to be infected with surra, is of considerable interest.

Financial aid from Government was secured for the importation of an Afrikander Bull. Stud animals at the Rodrigues Station are to be improved by fresh importations from South Africa.

19. *Co-operative Credit Societies*

Further amelioration in the administration of these Societies will be possible now that far reaching amendments and additions have been made to existing legislation. Steady improvement may once more be recorded in the business affairs of the majority of Societies. However, the price of sugar still retards and makes the recovery of loans in many cases a difficult matter. Share capital has shown a slight increase in some cases.

20. *Rodrigues*

Pressure of work at headquarters, mainly connected with the Bi-Centenary Exhibition, prevented a visit to this Island and the projected survey of agricultural conditions. This will be carried out in 1936. The Dependency, on the whole, experienced favourable agricultural conditions and most crops gave satisfactory returns.

21. *General*

I wish to record my appreciation of the assistance which I have received from the staff of the Department during the period under review. Especially I wish to mention the services of Messrs. Shepherd, Lionnet, Baissac, O'Connor and Nicolin in connection with the Executive Committee of the Agricultural Section of the Bi-Centenary Exhibition.

Réduit,
April 24th, 1936.

G. E. BODKIN,
Director of Agriculture.

PART II

REPORT OF THE SUGAR CANE RESEARCH STATION AND DIVISIONAL REPORTS OF THE DEPARTMENT OF AGRICULTURE

A full report of the activities of the Sugarcane Research Station for 1935 is published, as usual, in the form of a separate report, short extracts from the report of each Research Officer only being given here.

A.—GENETICIST'S DIVISION

1. *Cane-Breeding.*

The cane-breeding progamme remained unchanged during the year: the policy being the same as that published in last year's annual report. The search for improved seedling varieties, to replace the elder kinds now grown, made further strides during 1925 as the best clones from the first seedlings to be bred by the Station when it opened, six years ago, reached the field trial stage and were planted in field trials on two experimental stations and also in over 30 multiplication plots throughout the Island preparatory to establishing them in numerous field trials, early in 1936, under the very diverse conditions found in the different districts. Later in the year two of the 1931 series of seedlings were also passed for field trials. As only thirteen* of approximately 53,000 seedlings bred in 1930 reached this field trial stage, after surviving their 3rd trials on experimental stations as virgin, or plant, canes, it will be realised that the standard set has been high, no seedling normally being kept unless it had proved superior in yield to the controls, or standard varieties, used in the 2nd and 3rd trials. In the writer's opinion the best of these seedling varieties sent out for field trials in 1935 were M. 171/30 and M. 73/31 both of which appear very promising.

The chief desiderata in this search for better varieties is the need for (1) a grande saison cane for the present Tanna growing areas, chiefly in the uplands; (2) a petite saison cane for the lowlands and (3) a Phythalus-resistant type for these regions in the uplands and lowlands which are badly infested with this white grub.

In making selections for the above areas, apart from the usual considerations, particular attention has been given to producing non-arrowing varieties, flowering being a common and very unpopular fault in many otherwise excellent seedling varieties.

From 1936 onwards the Station should be in a position to keep up a regular supply of high-grade sugarcane varieties for distribution and trial on estates; and as Mauritius is one of the few sugarcane countries where the old named varieties have not yet been replaced by improved seedling varieties a considerable increase of sugar output per acre can be expected in the future, judging by experience elsewhere. At present, over 50% of the area grown is still under White Tanna, a variety that has, until recently, given steady returns in most districts where it is grown—a tribute not only to this cane-type but also to the Planters who by careful field methods have grown it for 45 years without allowing it to "run out". A summary of the breeding work carried out in 1935 together with that of previous years is given in tabular form below.

* Since reduced to ten.

Summary of Cane Breeding Work 1930 to 1935.

	1930	1931	1932	1933	1934	1935
Controlled crosses made, including selfings ...	409	355	457	466	121	356
Uncontrolled crosses	569	370	46	1	nil	nil
1st Year seedlings raised in boxes ...	52,340	72,888	157,948	64,883	95,105	78,572
" " planted out on expt. stations ...	18,888	22,011	23,016	18,903	20,731	14,724
" " distributed to estates for planting.	3,000	5,000	10,040	3,645	4,550	nil
Selections made from 1st year populations for 2nd trials.	233	263	252	250	...	...
" " 2nd trials above for 3rd trials.	46	56	60	...	...	...
" " 3rd trials above for Field trials.	*13	†5	...	...	...	...

2. *Variety Trials.*

Since the opening of the Station in 1930, co-operative variety trials have been conducted regularly throughout the Island, with all the available local or introduced varieties thought to be of promise. The results of these trials to-date, published in the annual reports of the Station, demonstrate the outstanding varieties amongst those tested in the various districts. The results from those variety trials cut in 1935 show the high yielding capacity of the following varieties, the first three of which should certainly be given a trial where they have not yet been tested :—Selangor Seedling, POJ. 2727‡. BH. 10 (12), POJ. 2878 and M. 109/26.

Because POJ.2878 and M. 109/26 have certain faults Planters are not recommended to make extensive plantings of these two varieties before testing them thoroughly.

As considerable local interest is being shown in the performance of the varieties BH. 10 (12), POJ. 2727‡ and POJ. 2878 a summary is given here of the yields of these three varieties in all trials in which they have been tested during recent years :—

	BH. 10 (12)	POJ. 2727	POJ. 2878
Mean yield of sucrose per arpent§ and number of trials.	4.68 tons (37 trials)	4.93 tons (21 trials)	5.53 tons (19 trials)
Mean yield of standard or controls in the same trials.	3.98 tons	4.39 tons	4.35 tons

The main result of these trials to date has been to enhance the reputation of BH.10(12), the area under which appears to be steadily increasing, and to temper the enthusiasm for POJ. 2878 which, although it gives high yields, exhibits several serious faults the chief of these being the profusion with which it arrows, its indeterminate growth-habit, the hairiness of its leaf-sheaths and the trouble experienced with its juice in the factory during defecation.

* Of which 3 have since been condemned. † Not yet completed.

‡ Referred to erroneously as POJ. 2725 in previous reports owing to having been wrongly numbered when introduced in 1928.

§ 1.043 acres.

In the writer's opinion 4th Nobilised Glagah varieties, such as M. 72 31 and M. 73 31, of the type now being produced and tested by the Station, will prove infinitely superior locally to such 3rd Nobilised types as POJ. 2727 and POJ. 2878 which exhibit rather too many of the characteristics of their wild ancestor.

A full account of the cane breeding, yield trials and research work carried out by the Station in 1935 appears in a separate report.

A. GLENDON HILL,
Senior Geneticist.

B.—BIO-CHEMICAL DIVISION.

1. The amount of laboratory work performed during the year has had to be seriously curtailed, first, because my assistant, Mr. P. Halais, was absent from the Colony on leave for about eight months, and secondly because I had personally to superintend the reaping of all the manurial trials. Furthermore, in accordance with a recommendation of the Advisory Committee of the Sugarcane Research Station, a practical course on Methods of Soil Analysis was held during the month of April, which was attended by twenty chemists who will consequently now be in a position to carry out soil analysis by methods comparable with those used by the Station.

2. The Base exchange fraction of certain soils of different types has been investigated, particularly with reference to the amounts of some of the bases present, e.g. manganese, magnesium, potash and calcium. In the case of the manganese, it was found that, although the soils of the dry regions contained most manganese soluble in concentrated hydrochloric acid, the highly leached soils of the moister regions are richer in exchangeable manganese than the soils from the drier regions. With regard to the other exchangeable bases, the amount increases as the rainfall decreases and it is considered possible that the highly leached soils may be deficient in exchangeable magnesium.

3. In the past, the investigation into the properties of various soils has been almost totally confined to differences due to locality. During the year under discussion a number of soil profile samples have been taken, and these are now being studied to determine the variations which may be encountered vertically. Up to the present, profiles studies have been limited to different mature soils, and also to soils of the forest regions and to one from Plaine Lauzun where free drainage is absent. The forest soils and the grey soil from Plaine Lauzun have been included, as it is felt that by widening the scope of the investigation, some points may be more clearly revealed than if the scope were limited to soils which are at present under sugarcane cultivation.

4. In the previous Annual Report, mention was made of the effect of mixing subsoil with the surface soil upon the nitrification processes in the soil. This work has now been continued, and the effect of admixture of subsoil with the surface soil has been tested in pot cultures, maize being the test plant. After the maize had been reaped, oats were planted, but unfortunately in the pots making best growth,

the competition between the plants was so great that this trial was abandoned. It can be stated, however, from visual examination, that in the early stages the oats trial fully confirmed the results obtained from the trial with maize. This trial showed that pure subsoil, treated with a heavy dressing of phosphatic fertilizer and fumier, is capable of producing a good crop of maize, and from the results obtained it is considered that lack of phosphate and possibly of organic matter are the chief causes for the infertility of Mauritius subsoils. Chemical analysis of the surface soil and the subsoil lying directly beneath it have shown that the chief differences as regards plant food lie in the phosphate and organic matter contents. This work is to be continued in the field, sugarcane being used as the indicator crop.

5. Truog and Dean (Trans. 3rd Inter. Congr. Soil Science) have suggested that inorganic soil phosphorus in combination with calcium or iron may be differentiated by varying the ratio of soil to acid (0.002% $N.H_2SO_4$ buffered to pH 3 addition of 3 grs ammonium sulphate per litre). Nine soils have been so examined, and whilst in some the concentration of P_2O_5 in the extract has remained practically constant, yet in others the amount is definitely lower when the soil acid ratio has been increased. In the former cases, the above authors consider that the P_2O_5 is derived from iron phosphate and in the latter calcium phosphate may be the more important source.

6. Twelve manurial trials have been reaped during the past crop season, two trials having been abandoned because of damage caused by *Phythalus Smithi* (Arrow). Due to the exceptional meteorological conditions which have prevailed during the year, the yields have in all cases been very satisfactory, two experiments having given average yields of over 50 tons of cane per arpent.

Results were also obtained from the manurial trial laid down to test the operation of border effect. In spite of the fact that the difference between the two series of plots amounted to about 17 tons per arpent, no evidence was obtained that border effect operated beyond the outside rows of each plot. Furthermore, it was found that not only did the outside rows of the plots receiving small applications of fertilisers yield better than the inner ones, but that the same fact was noted with respect to the outer rows of the heavily fertilised plots. Consequently, there was little difference in the calculated results whether the border rows were eliminated from the trial or not.

7. A number of papers have been published during the year, three in the Revue Agricole de l'Ile Maurice and one was submitted to the International Congress of Sugar Cane Technologists held at Brisbane. Bulletin No. 9, "Base Exchange Relationships in Mauritius Soils" was also prepared and published.

N. CRAIG,
Bio-Chemist.

C.—PHYSIOLOGICAL DIVISION.

The Physiological Botanist was away on leave from March 23rd to December 8th, and experiments already initiated were maintained by Sc. Assistant d'Emmerez, during his absence.

2. Considerable progress has been made on the root investigations, the development of the root-system of BH. 10 (12), POJ.2878 and White Tanna up to six months of age having been studied in detail. The root-systems were excavated in completeness at 2 months, 3 months, 5 and 6 months of age, the systems being afterwards reconstructed in specially made frames. There were striking differences in the early root-development in the three varieties. Experiments on the effect of sub soiling on the root system of sugarcane have also revealed a remarkable effect of this treatment. Roots in the subsoil develop the characteristics of superficial roots under conditions of subsoil cultivation, and the root system is considerably increased as regard spread, depth and number of roots. The effect of deep application of fertilizer on root growth is at present being investigated.

Pot experiments were carried out to investigate the growth of roots in subsoil alone and in subsoil to which various substances had been added. Qualitative observations on stem and leaf growth and degree of tillering were also made, and remarkable differences in the relative growth of shoots and roots were established. The weight of roots was in all cases greater than that of the aerial portions. The weight of the aerial portions as a percentage of root weights, however, varied in the treatments from 13% to 88%. The results show that abnormal plants are produced when sugarcane is grown in subsoil, and the abnormal symptoms have been defined.

3. The effect of a late, heavy application of nitrogen on the growth and physiology of the sugarcane has been investigated. Increased yields at harvest as a result of the nitrogen application were traced to an increase in the number of canes per stool rather than to increased growth of individual canes. The nitrogen application had a marked effect on the flowering of the canes, flowering being significantly decreased.

4. Experiments to determine the resistance of canes to the depredations of Phytalus larvae have been continued. To date seedlings of the cross POJ. 2878 x Uba Marot have proved themselves markedly superior to all other varieties tested, in their resistance to the larvae.

5. The soaking of setts before planting has been shown to cause increased yields even in second ratoons. That the beneficial effect of the treatment is not confined to the virgin, or plant, crop but is cumulative over a number of crops makes the treatment of even greater importance than was originally thought.

6. Investigations to determine the absorbing power of the sugar cane root-system involving detailed counts of root-hairs, and an investigation of the transference of root characters from parents to offspring have recently been initiated.

H. EVANS,
Physiological Botanist.

AGRICULTURAL DIVISION

1. *Central Experimental Station, Réduit.*

A collection of the best varieties of sugar cane was grown in Fields 18 and 19 for distribution to planters. The price of cane cuttings was reduced to two cents each in order to encourage rapid propagation of new varieties. Many applications were received and 31,565 cuttings were sold for Rs. 631.30 cts. Sixty three tons, not required for propagation, were bought by Trianon Estate.

The plantation of Smooth Cayenne pine apples was successful and indicates that this crop will give good yields in Mauritius if planted on suitable land and given proper cultivation. A small portion of the crop was harvested towards the end of the year, the remainder will ripen early in January, 1936. Ripe fruits were sold to the Mauritius Pineapple Canning Coy.

A new field has been prepared for the propagation of pineapples. about three acres will be planted with a view of carrying out manurial experiments and also to obtain an abundant supply of planting material for distribution. Experiments have proved that the best planting season is from December to February. New plantations should on no account be made on lands which have recently borne crops of this fruit.

The experimental plantation of *Hydnocarpus Wightiana*, Blume ; made last year, is now well established ; the plants are healthy and growing rapidly. Fifty seedlings were planted in Field 17 to replace clove plants which had died. The Chaulmoogra tree is resistant to cyclones and grows well in the Island. It would be possible to obtain sufficient oil for local consumption if several acres were planted with this useful tree.

Seeds of *Ceratonia siliqua* Linn. the Carob tree, were introduced from Malta and Palestine. Germination was good and several hundred plants were raised. Fifty seedlings have been planted in Field 17 and twelve in Field 20. This tree, which is extensively cultivated in the Mediterranean region, yields a sweet, edible pod which is a valuable fattening nutritious food for cattle. As it is very hardy and will grow in arid regions, it is proposed to establish small plantations in different districts. Trials are now being made at Vallée des Prêtres, Chebel Estate, Central Experiment Station etc.

The experimental Coffee plantation established in Field 15, in 1931 is growing well. Some of the lowland species like *C. liberica*, Hiern. and *C. excelsa* Cheval. bore a good crop of berries. The seeds were collected and sown for propagation.

Plantations of various food crops were raised in order to have a supply of planting material on hand whenever required. A small plantation of " Butter beans ", Phaseolus lunatus, Linn. was made, the plants grew vigorously, flowered, but bore very few pods.

2. *Royal Botanical Gardens, Pamplemousses.*

The varietal cane fields at Mon Plaisir and Mon Rocher were planted with selected varieties. 9,640 cuttings were sold for Rs. 192.50 cts. Sixty seven tons of cane were bought by " Beau Plan " and " Belle Vue " Estates.

A small experimental Vanilla plantation was made along rows of previously established *Jatropha curcas* Linn. (Physic nut tree). The vanilla cuttings have started and, it is expected, will flower next year.

Several rows of Pepper vines were planted under the shelter of *Cajanus indicus* Spreng. (Pigeon pea) to provide the necessary shade required by the plant.

Collections of many varieties of Manioc, Yams, Sweet potatoes, ground nuts and Eddoes were grown. Planting material of these food plants were distributed free to all persons applying for them.

526 Mango grafts, 387 Litchis layers and 49 Lime layers were raised in the Nursery.

The ornamental section was maintained in good condition throughout the year. Canals were cleaned, bridges repaired, kiosks re-thatched etc. Coral sand was spread along the two avenues leading to "Mon Plaisir". Several avenues in the gardens were planted with the following palms :—

Hyophorbe amaricaulis, Mart. — *Areca Normanbyi*, F. Muell.
Acanthophoenix crinita, H. Wendl. — *Dictyosperma album*, H. Wendl.
~~*Hyophorbe*~~ *indica*, Gaertn.

The last named species is a very rare indigenous palm ; there are only two or three adult specimens growing in the forests near "Grand Bassin". Many seedlings have been raised and this interesting palm has been saved from possible extinction.

The quarters of the Overseers were repaired and painted by the Public Works Department. Extensive repairs were started on Mon Plaisir house ; the works were still in progress at the end of the year.

Plants and seeds were sent in exchange to the following Agricultural and Botanical Institutions :—

Havard University, Cuba.
Inspector of Agriculture, Anglo-Egyptian Sudan.
Director, Research Institute for Tropical Agriculture, Turkey.
Under Secretary, Department of Agriculture, New South Wales.
Deputy Director of Agriculture, Burma.
Director of Agriculture, Zanzibar.
Director Coconut Grove Palmetum, Florida U.S.A.
Suttons and Sons, Reading, England.
Director of Plant Breeding, Department of Agriculture, Sydney, N.S.W.
Coffee Research and Experimental Station, Tanganyika.
Directeur, Station Agronomique, Réunion.
Académie Malgache, Madagascar.
Service Parc et Jardins, Madagascar.

3. *Abercrombie Nursery.*

As in previous years, a large number of plants was raised in the Nursery for sale to the public. The following plants were sold :— 110 Litchi layers, 66 Mango grafts, 221 Citrus grafts and seedlings, 86 Palms, 1,291 Ornamental plants, 458 Miscellaneous.

The revenue from the sale of plants amounted to Rs. 812.35 cts. a decrease of Rs. 528.60 cts. compared to the previous year.

4. *Barkly Experiment Station.*

This station, being situated in a central locality, is very often visited by planters and other members of the public. In order to encourage the planting of economic plants, the price list was revised so as to offer cheaper plants for sale.

The revenue during the year amounted to Rs. 1,744.85 cts. as compared with Rs. 1,550.90 cts. in the previous year.

Plants and seeds were received from the following places: -

Havard University, Cuba.
Station Agronomique, Réunion.
Royal Palm Nurseries, Oneco, Florida U.S.A.
Yokohama Nursery, Japan.
Carter and Sons, Natal.
Director of Agriculture, Palestine.
Botanic Gardens, Kew.
Inspecteur Agricole, Madagascar.
Coconut Grove Palmetum, Florida U.S.A.
W. Jepson Esqre, Java.

The collections of fruit trees in the orchard are growing well. Several of the new varieties of letchis imported from India in 1929 flowered and fruited; the fruits differ in shape and size from the local variety. A small-seeded variety, propagated from a single tree growing at Pamplemousses Gardens, bore fruit of excellent flavour; this variety is a late bearer and worth propagating. Three Pecan nut trees flowered for the first time, but as they bore only staminate flowers, no fruit will be obtained this season. Eight, named varieties of this useful tree have been grafted and are growing vigorously.

Seeds of the rare indigenous species of coffee, *Coffea mauritiana*, Lan. were collected on the hills near Grannavien. Germination was good, 150 seedlings have been raised.

Many cuttings of *Derris elliptica*, Prain. were made, this plant yields a useful insecticide and judging by the results obtained may be easily propagated. Another species *Derris malaccensis*, Prain was received from Java and is now successfully established.

5. *Allotments.*

Satisfactory progress was made on the majority of the allotments, good crops were obtained chiefly on account of well distributed rainfall throughout the year. The sum voted for maintenance was increased to Rs. 1,000 for the financial year 1935-36, this will allow a more liberal distribution of building material and provision of water supply where required.

Officers of the Agricultural Division pay regular visits to the different allotments and give practical advice when necessary. As in

the past, free supplies of planting material of food plants were made. There are now 104 plot holders occupying land on the various allotments viz :—

Barkly	...	48
Curepipe	...	7
Floréal	...	2
Bois Marchand	...	28
Midlands	...	1
Malherbe	...	18

6. *School Gardens.*

The thirty three registered school gardens were often visited by the Senior Agricultural Officer and his assistants, advice was given to the Head Teachers, their staff and pupils as to the best methods of sowing, planting, manuring, control of diseases, insect pests etc.

Owing to the excessively heavy rains, the gardens were not on the whole as good as in the previous years.

Prizes were awarded to the best kept gardens as follows :—

1st Prize of	Rs.	45	to Plaines des Papayes	Government	School
2nd	„	35	„ Mahebourg	„	„
3rd	„	30	„ Escalier	„	„
4th	„	25	„ Ruisseau Rose	„	„
5th	„	20	„ Crève Cœur	„	„
6th	„	15	„ Bambous	„	„

Six prizes of Rs. 5 each were given to the following gardens :—

Old Grand Port R.C. Aided School
Plaisance Orphange C. of E. Aided School
Quatre Bornes Government School
Souillac „ „
Mare d'Albert „ „
Poudre d'Or „ „

7. *Visits to Estates and Planters.*

The Senior Agricultural Officer paid sixty three visits to Estates in order to keep in touch with the planting community. Various suggestions were made and different questions of agricultural interest discussed. The Agronomist carried out field trials on some estates with relation to application of fertilizers, manure etc. Eighty one visits were made by him during the year.

The Agricultural Instructors visited the small planters and gave them necessary advice on many agricultural subjects.

8. *Export of Litchis.*

Last year's trial shipment of litchis to London gave fairly good results. It was decided to export a larger quantity this year, if suitable cold storage accommodation could be provided; but unfortunately, owing to an accident to the "S.S. Grantully Castle", it was not possible to export any litchis early in December. 542 cases of selected litchis were shipped to London by Messrs. Pearmain & Co. towards the end of the year by the "S.S. Garth Castle".

C. A. O'CONNOR,
Senior Agricultural Officer.

BOTANICAL AND MYCOLOGICAL DIVISION

1. *Diseases of sugar cane (Saccharum spp.)*

Gumming (caused by *Bacterium vasculorum* (Cobb) G. Smith)

As in former years cuttings of the new cane varieties bred by the Sugarcane Research Station, which had passed their second year's performance trial, were planted in the gumming resistance trial. As a result of the good growing conditions in November and December of the year under review, and the immaturity of the cane shoots in the gumming resistance trial set out at the end of 1934, observations on the reaction to the disease of the varieties in this plot have been postponed till the time of reaping of the 1936 crop.

Leaf Scald (caused by *Bacterium albilineans* Ashby).

The scald resistance trial plot laid out in 1934 was abandoned as the source of inoculum—juice from the leaves of very young shoots—did not seem satisfactory. Very little infection was noted on shoots from inoculated cuttings. Another plot was laid out to test a method for the determination of scald resistance in seedlings. Two methods of inoculation of the cuttings were employed. The first was as follows:—

The knife used for making the cuttings was infected with liquid peptone saccharose in which a portion of a scald infected White Tanna stem had been left standing for five days. Previous to immersion the portion of the stem had been washed in soap and water. The ends of the cuttings were also smeared with the above mentioned suspension. Ten holes, each containing one two eye cutting, of each of the following varieties were planted:—R.P.6, R.P. 8, White Tanna, D.K. 74, POJ. 213, and POJ. 2878.

The second method of inoculation was as follows:—

Two eye and three eye cuttings of the above mentioned varieties were taken and their ends dipped in a suspension of the scald organism in water. Five three eye cuttings and five two eye cuttings of each variety were planted Ten holes of each variety were also planted with untreated cuttings as controls. Up to the time of writing, eight months after the cuttings were planted, no scald symptoms have been observed on any of the shoots in this plot. The plot has been much damaged by stags and hares, but the shoots still remaining will be left until the harvesting of the next crop, when further observations will be made.

Investigations have been carried out on the effect of peptone saccharose agar of varying pH reaction on the growth of *Bacterium albilineans* Ashby. The organism seems to grow equally well on media of a pH varying from 6.8 to 7.2.

Pending the discovery of a better method for testing scald resistance in seedlings, knife infection of cuttings is being employed on seedlings which have passed their third year general performance trial by the S.R.S. Observations will be made on the shoots from these infected cuttings throughout their growth until maturity. Cuttings of the varieties White Tanna and D.K. 74 have been similarly inoculated with scald and planted in the plot as standards with which to compare the reaction of the new varieties to the disease.

Smut (caused by *Ustilago scitaminea* (Rab.) Syd.).

Rather severe outbreaks of this disease occurred on the variety BH. 10/12 on several estates in the low-lying and thus warmer parts of the island from January until about April. It would seem that some crop loss has resulted from the attacks, especially in 3rd and 4th ratoons. The exceptionally high temperatures experienced during the early part of 1935 may have had a stimulating effect on the causative fungus.

In March, 1935, an experiment was laid out at the Pamplemousses Experiment Station with the object of devising a reliable method for testing the resistance of new seedlings to this disease. Cuttings of the varieties D. 109, RP. 8 and BH. 10/12, whose reaction to smut in the field is known, were immersed in a suspension of spores of *Ustilago scitaminea* in water, and other cuttings were immersed in water only as controls. The cuttings were planted on March 5th, 1935, and up to the time of writing the reaction of the different varieties to the disease has been in accordance with their known degree of resistance in the field. All the controls have remained free from disease.

In November, 1935, a rather severe outbreak of "eyespot" disease (*Helminthosporium ocellum Faris*) occurred in some fields of eleven months old BH. 10/12 virgins at an estate in Plaines Wilhems. The attack resulted in the bud rot and *death* of many young "baba" shoots. The trouble was ascribed to the excessive rains experienced that month with lack of heat necessary for active growth. "Eye spotting" caused by the same fungus was also noticed on the leaves of the tall shoots, on which however, infection was slight. These leaves were well exposed to sun and air as opposed to the shaded conditions under which the "babas" were growing.

A leaf yellowing and wet top rot of canes occurred in patches on several estates in the Grand Port district early in 1935. The affection appeared identical with one reported on in previous years and attributed to lightning injury. The recovery of affected canes (which were not suffering from the top rot) without any treatment pointed to the same conclusion in 1935.

2. *Diseases of Tobacco.* (*Nicotiana tabacum*).

Mosaic. Serious outbreaks of this disease again occured on two estates in the Black River district. More systematic "roguing" of diseased plants towards the latter part of the year, however, resulted in a check in the spread of the disease. Inoculation experiments carried out at the Central Experiment Station, Réduit, showed that the mosaic of *Solanum nigrum* L., called locally "Brède Martin", a weed widespread in the island, can be transmitted to tobacco.

In a field heavily infected with mosaic in the Black River district a tobacco plant was discovered in September exhibiting symptoms of a disease hitherto unrecorded in Mauritius. The symptoms consisted of severe distortion of the younger leaves, severe mottling of the leaves, as in an acute form of mosaic, hypertrophy of the leaf tissues on the lower surfaces in the region of the veins, or in close proximity to the veins, with the subsequent production of leafy outgrowths on the lower leaf

surfaces. Some of the symptoms agree closely with one of those of the "crinkly dwarf", or "leaf curl", or "leaf crinkling" described by H.H. Storey in East Africa (Nature, Vol. 128 : pp. 187—188 : Aug. 31, 1931), and with some of those of the "krœpœk" diseases described by T.H. Thung in Java (Paper abstracted in Rev. App. Myc. XI : p. 475), but it has not yet been determined whether or not the disease here is identical with any of those above mentioned. Infection has been transmitted to healthy plants by *lightly* stroking their leaves with a cotton wad soaked in an aqueous extract of *dried* infected tissue. Since the first plant was discovered many others with the same disease have been found in the vicinity. The leaf mottling referred to above may be a symptom of the new disease, or it may be an indication of the combination of mosaic with "leaf crinkling" or "leaf curl." Further investigations are being carried out on this disease, but in the meantime planters are being warned to keep a strick look out for it in their plantations, and to "rogue" out immediately any affected plants that they may encounter.

Black Shank (*Phytophthora parasitica* Dast. emend. Ashby) again caused losses on many plantations, particularly during the warmer months of the year. Some of the strains of Amarello selected by the Tobacco Breeding Officer are showing more resistance to the disease than the original Amarello. Further selection is being carried out along this line, and new strains are tested by the T.B.O. in a black shank resistance trial.

Granville Wilt (*Bacterium solanacearum* E.F.S.) was encountered in many districts. In some plantations appreciable losses have occured, particularly in the Rivière du Rempart district. It has been observed that the disease rarely occurs in soils of a calcareous nature. The effect of liming the soil as a control measure is to be tried in the near future.

3. *Diseases of other crops.*

Pineapples (*Ananas sativus* Schult).

Experiments on the control of dry side-rot of the fruit by spraying with Sulphemulsol (now called Mulsulphol) at 2% strength were carried out at Montagne Longue, but were inconclusive owing to the fact that there was no outbreak of the disease during 1935, even on the untreated plots.

A severe wilt in a pineapple plantation in Flacq has been studied. A phycomycetous fungus has been isolated from diseased roots, but the opinion is held that the trouble is due to unfavourable soil conditions, the soil there being of an exceptionally stiff, clayey texture, poor in organic matter and mineral food material. Advice has been given to try heavy applications of organic matter to the soil, both for its physical and chemical effects. The chemical analysis of the soil on this estate was undertaken by the Chemical Division of this Department.

Potato (*Solanum tuberosum* L.).

Field studies were carried out on a wilt of potatoes in the Black River district,—apparently caused by *Bacterium solanacearum* E.F.S. It was observed that a newly imported and apparently high quality variety from South Africa was more susceptible to the disease than the Madagascar varieties.

The Scientific Assistant continued studies on the "heart" rot of *Dictyosperma album* Wendl. ("palmiste blanc"), which seems to be bacterial in origin. Physiological and morphological studies of the bacteria isolated from diseased tissues were carried out. Inoculation experiments on young, healthy plants gave positive results in most cases when inoculation was done by means of injection of the organism with a hypodermic needle. Inoculation of maize plants also gave positive results. On sugar cane the results were negative.

Similar work was commenced on bacteria isolated from *Roystonia regia* O.F. Cook (Royal Palm) and *Thysanolaena maxima* Kuntze, a tall grass simulating bamboo in habit of growth.

A fruit and top rot of Papaw (*Carica papaya* L.) was recorded for the first time. The affected plants were growing in a badly drained portion of the plantation at the C.E.S., Réduit. *Phytophthora* sp. was found in association with the diseased tissue.

Other diseases recorded were as follows:—

Leaf spot of geranium (*Pelargonium zonale* Wild.), with which was associated a bacterium and a species of *Gloeosporium*.

Leaf spot of "Petsai" (*Brassica chinensis* L. var.)— *Colletotrichum* sp. in association.

Fruit rot of "bringelle" (*Solanum melongena* L.) *Phytophthora* sp.

Collar rot of *Aquilegia* sp. *Phytophthora* sp.

4. *Weed control.*

In conjunction with Mr. P. O. Wiehe, Lecturer in Plant Ecology at the Agricultural College, much work was done on the control of *Hydrocotyle sibthorpioides* Lam., a weed of lawns and golf greens. Chemical treatments of various kinds were tried, but no success was obtained. The weed thrives at the expense of the growth of the grass during the cool, wet winter months. Advice has been given to keep cut worm (*Crambus* sp.) attacks down to the minimum by the use of lead arsenate spray (3:1000) to avoid the formation of bare patches in lawns and greens which the weed would invade. The weed seems to succumb to competition with the grass on the approach of drier and warmer weather if the grass has not suffered from cut worm attack.

5. *Miscellaneous.*

The undersigned was responsible for the usual lectures and practical demonstrations to first and second year students in Botany and Mycology at the Agricultural College. He was also in charge of the Plant Inspection service at the Port.

6. *Publications.*

A paper entitled "Gumming and Leaf Scald Resistance Trials in Mauritius" was prepared by the undersigned and submitted to the International Congress of Sugarcane Technologists in Brisbane.

E. F. S. SHEPHERD.
Botanist and Mycologist.

SUGAR TECHNOLOGICAL DIVISION

1. *Visits to Factories, Investigations.* etc.

Several factories were visited repeatedly by the Sugar Technologist in connection with the control of pan boiling and investigations on super centrifugal clarification. Other factories were visited as usual and advice given when sought for.

2. *Control of Pan Boiling.*

The electrical conductivity apparatus for the control of pan boiling was installed in four more factories. This apparatus has made possible the production of a larger and more regular crystal, the benefits of which cannot be over-emphasized. Quite briefly they are : increased pan capacity, better curing, higher recovery and possibly the production of a sugar of better keeping qualities. It is interesting to note that this method made possible the production of massecuites containing regular crystals in a factory where the low massecuites always used to contain an abnormal amount of false grains.

3. *Preliminary Research on Super Centrifugal Clarification.*

The removal of impurities from syrups and runnings by the use of super centrifugals was investigated. A large amount of analytical work was carried out in this connection and results will be published in due course.

4. *Polarization of Raw Sugars.*

The analysis of raw sugars in relation to changes of polarization during storage was concluded and the results will be published in the Revue Agricole. A fact interesting to record is that all Mauritius raw sugars start to absorb moisture when placed in an atmosphere having an average relative humidity of 81. When the relative humidity of the air is 74 and the temperature around 25°C. few sugars absorb moisture.

5. *"Controle Mutuel" and Factory Results.*

Thirty eight factories contributed to the "Controle Mutuel" and returns were regularly distributed fortnightly amongst contributors.

The average percentage of sucrose in the cane was 13.14 as compared with 12.86 and 13.24 in 1934 and 1933 respectively. The sucrose in the cane dropped a little towards the end of the crop in certain localities on account of early rains. The juice was, in general, of fair quality but in November and December clarification was difficult in certain districts. In a few cases the use of Phosphoric and Sulphurous Acids had to be resorted to.

An important amount of POJ. 2878 was manipulated. The sugar contents of these canes are quite satisfactory but the juices are, in general, very difficult to clarify.

With the help of the Sugar Industry Reserve Fund Committee a Werkspoor crystallizer was installed in one of the sugar factories. The one masse cuite process employed was changed to a two masse cuites process and the three masse cuites process will be applied next year when it will be possible to report fully on the advantages of this new type of rapid cooling crystallizer.

6. *Educational.*

The usual duties in relation to teaching at the Mauritius Agricultural College were performed by the Sugar Technologist and the Assistant Sugar Technologist. For practical demonstrations the students visited many sugar factories during the off-season as well as during the crop.

The Assistant Sugar Technologist proceeded to Europe on leave of absence on the 11th March and resumed duty on the 9th December.

LOUIS BAISSAC,
Sugar Technologist.

VETERINARY DIVISION

1. *Importation of Animals.*

The animals imported from foreign countries and Dependencies of Mauritius were as follows :—

Description of Animals	From Foreign Countries		From Dependencies	
	1935	1934	1935	1934
Cows and Oxen	4,407	4,767	284	715
Horses and Mules	11	24	10	...
Pigs	...	...	1,887	2,450
Sheep	...	63	569	713
Goats	...	...	3,847	4,156
Dogs	7	5	...	4
Turtles	...	...	170	...
Poultry	179	...	9,943	...

landing has been allowed after the usual examination on board.

2. *Quarantine.*

Three Afrikanders (2 bulls and 1 cow) were imported and placed under observation during two months at Fort William Quarantine Station. Seven dogs were also imported and placed under six months quarantine at the Government kennels, Réduit.

3. *Contagious Diseases.*

(A)—*Tuberculosis.*

119 animals have been tested with tuberculin with negative results of which 105 were milch cows and 14 in a breeding herd. The supply of B.C.G. vaccine is increasing annually as shown in the table below and continues to be much appreciated by stock breeders. The application of this vaccine contributed in a large measure to the improvement of the herds.

The following is the number of doses delivered during the year in comparison with those of previous years :—

Year ...	1935	1934	1933	1932
No. of doses ...	1,618	1,571	1,520	1,492

(B)—*Trypanosomiasis.*

7,482 animals have been examined and 13,659 blood smears taken. 6,157 direct microscopical examinations of the blood were made in the field. Double blood smears were taken from 3,751 animals and examined, after staining with Leishman's stain, with the assistance of the Bacteriological Laboratory.

Smears taken were as follows :—

Estates	10,562
Rouliers	1,115
Fort William Quarantine Station ...	211
Government Dairy	1,316
Other milch cows	455
Total	13,659

Positive cases detected as follows : —

Tryp.	Bovine	Equine	Total
a. Vivax	113	nil	113
b. Evansi	31	2	33
c. Theileri	2	nil	2
Total	146	2	148

For comparison with those of the two previous years :—

			Years 1934	1933
Number of smears examined			7,382	8,538
Trypanosomes detected.	Evansi	Bovine	20	28
		Equine	4	6
	Vivax	Bovine	8	nil

The two positive cases of. *T. evansi* on equines were treated successfully with Naganol and the animals recovered. The regulation made under the Animal Ordinance in connection with the destruction of equines infected with Surra, has been amended as a result. Treatment of bovines with tartar emetic has proved to be effective.

This Division is grateful to the Government Pathologist and the staff of the Bacteriological Laboratory for their help and assistance in the examination of blood smears.

(C)—*Piroplasmosis.*

37 positive cases of red water fever (*P. bigeminum*) have been detected during the year under review. Six animals died before treatment and others were treated successfully with trypan blue and recovered.

4. *Abattoir Inspection.*

(1) 47 surprise visits were paid in the different abattoirs, one carcase was seized for tuberculosis at Rose Belle abattoir and one case of illegal slaughtering detected at Rivière des Anguilles.

(2) 63 cows and heifers under age were allowed to be slaughtered compared to 71 and 60 in 1934 and 1933 respectively.

5. *College of Agriculture.*

First and third year students were lectured to on anatomy, physiology of farm animals and animal pathology during the year.

F. E. LIONNET,
Government Veterinary Surgeon.

ENTOMOLOGICAL DIVISION.

1. *Campaign against Phythalus Smithi Arrow.*

The usual report reviewing the working of the campaign during the period June, 1934, to July, 1935, has been submitted separately by the Acting Assistant Entomologist. For reasons of economy and general administrative convenience it is proposed in future to include the report on the Phythalus campaign in this section of the Annual Report of the Department.

The mass emergence of beetles occurred in 1935, soon after the heavy rains which started at the beginning of November. The comparative figures showing the total number of beetles captured from 1st October to 31st December 1934 and 1935 respectively are given below.

Centres	October–December 1935		October–December 1934	
	No. of Beetles	Amount spent	No. of Beetles	Amount spent
		Rs. c.		Rs. c.
Pamplemousses and Rivière du Rempart	37,538,400	6,869.99	23,568,950	4,555.46
Saint Julien ...	25,457,056	5,615.60	19,074,567	4,108.98
Sébastopol ...	12,728,495	3.319.45	9.641,507	2,188.80
Moka	38,310,336	4,840.64	22.358,516	4,104.68
Plaines Wilhems ...	34,205,234	7,005.88	17,244,484	3,571.82
Grand Port and Savanne	74,520,338	10,828.68	87,579,243	13,395.83
Total ...	222,759,859	38,480.24	179,467,267	31,925.57

The rate paid per % in 1935 was 17.3 cents as compared with 17.7 cents in 1934. Two new estates Sans Souci and Rich Fund were added to the list of the 14 receiving centres as recorded in the last Phythalus report. Owing to the very small number of beetles collected in some localities, it was considered advisable to employ night gangs for performing the collection. Seven such gangs each composed of 10 collectors were employed on the estates concerned at the rate of 20 cents per night per collector.

No new centre of infestation was recorded during the year. In certain localities the infection has gradually spread to adjoining estates as for example the following :—

(*a*) the infection from Britannia has spread to Bean Bois an annexe of St. Aubin (*b*) the infection of Riche Bois has spread to Savannah (*c*) the infection of Etoile has spread to Deep River.

During the year numerous new parasites were received from the Phythalus Investigation Officer, Mr. W. F. Jepson, B.Sc. A.R.C.S., from Java, the Far East etc. Special care was taken before liberating these parasites in the Island so as to ensure the least possible chance of introducing at the same time some hyperparasites. Mr. Raymond Mamet was particularly detailed to this work.

2. *Major pests recorded during the year.*

(A)—The spotted borer *Diatraea venosata* Walk.

A severe outbreak of this sugar cane pest was recorded on one estate situated in the southern lowlands part of the Island. In some fields nearly 100% of the cane stems were bored. The only parasites of larvae obtained from breedings made in that region, at the time of attack, were the Braconid *Apanteles simplicis* Vier. with a parasitism of about 24% and the Ichneumonid *Heniscospilus antakarus* de Sauss with a parasitism of 1%. The importation of more efficient parasites such as the tachinid fly *Lixophaga diatraeae* Towns. is under consideration.

(B)—*Argyroploce rhynchias* Meyr.

This moth was very injurious to Canavalia beans, *Canavalia ensiformis*, at Chebel, in August and September, over a plantation of about 15 acres. A high percentage of all the stems were completely bored and the plants eventually died. As a control measure, it was only possible to uproot and destroy all infested plants as soon as they were showing symptoms of attack. A dipterous parasite of larvae, an unidentified Tachinid, was bred from this insect. The rate of parasitism was of about 5%.

(C)—*Gryllotalpa africana* P. de B.

This mole criket attacked potato tubers at " La Ferme ". About 20% of the potatoes were bored. Poison baits with zinc sulphide and with Paris green were tried with some success.

(D)—*Icerya Seychellarum* Westw.

This mealy bug was very injurious to fruit trees and ornamental plants. A very promising method of control has been obtained by the use of suitable banding grease which, by cutting out the fostering ant *Technomyrmex albipes* Smith, causes a free development of the Coccinellid predators.

(E)—*Aspidiotus destructor* Sign.

This coconut scale continued its ravages. The use of the above-mentioned grease against the fostering ant *Technomyrmex* has not given very significant results since colonies of this ant may live in the aerial part of the palms even if they are isolated from the soil.

Barber's poison syrup was not successful in getting rid of the ants on the coconut trees, whilst the same poison syrup has proved very effective against the same ant in households. The introduction of the coccinellid *Cryptognatha nodiceps* Mshl,, is now under consideration.

(F)—Cucurbits flies *Dacus ciliatus* L. and *Dacus Emmerezi* Bez.

The Braconid parasite *Opius phaeostigma* Wlkn, received from South Africa, parasitised these flies successfully in captivity, but owing to the very small numbers received it could not be colonised in the Island. Arrangements have been made to receive the parasite in the adult stage (up to the present only fruit fly pupae suspected to have been parasitised have been received).

(G)—*Termites.*

Apart from the ordinary damage done to buildings by termites, one species *Coptotermes* sp. *near intermedius* Silv was found to attack bags containing sugar, stored in the Docks. The damage sustained was not very severe. Experiments were made to see if this species of termite has any predilection for aloe or jute bags. Although the experiments are not quite completed, there exists strong indication that the jute bags are attacked more or less in the same degree as aloe bags. The causes responsible for these attacks seem to be the moist condition which may exist in some raw sugar bags when stored and the wood logs, supporting the first layer of bags, being specially favourable to termite attacks.

3. *Publication.*

The following papers were prepared during the year by the Officers of the Entomological Division :—

(1) Un nouveau moyen de lutte contre le pou blanc, *Icerya seychellarum* Westw.
(2) The Sugar Cane White Grub, *Phythalus Smithi Arrow.* (A contribution to the 5th Congress of Sugarcane Technologists).
(3) Annual Report on the operation for the control of Phythalus Smithi.
(4) Termites in Mauritius.
(5) Contribution à l'étude des Coleoptères des Iles Mascareignes.
(6) New species of Carabidae from Mauritius.
(7) Les Coccinelles des Iles Mascareignes.

4. *Imperial Entomological Conference.*

The Assistant Entomologist, whilst on leave in Europe, attended on behalf of the Government of Mauritius the 4th Imperial Entomological Conference which was held in London from September 19th to September 27th. A paper reviewing the progress of the work done in Mauritius for the last five years was prepared and presented to the Conference by the Assistant Entomologist.

5. *General Activities of the Division.*

The post of Entomologist being still vacant, the Assistant Entomologist remained in charge of the Division. Lectures and practical demonstration in Agricultural Zoology and Entomology were delivered by the Assistant Entomologist and during his absence by Mr. J. Vinson, Acting Assistant Entomologist, to students of the 1st and 2nd year of the College of Agriculture.

The Entomological Division was represented in the Agricultural Section at the Bi-Centenary Exhibition of the town of Port Louis in August—September 1935. A good deal of time was spent in the preparation and disposal of the exhibit and during several nights an Officer of the Division was in attendance giving explanation to visitors.

Numerous visits to various estates and small planters were paid by Officers of the Division. Advice and demonstrations on the control methods were given to those concerned.

The Scientific Assistant was detailed, one day per week, for a certain period, for the examination of plants, seeds etc. at the Customs. Numerous plants, seeds etc. were examined for various exporters and the certificate of examination delivered jointly, with the Botanical Division.

During the year fifteen permits for removal of manure in infested areas were delivered according to Government Proclamation No. 7 of 1931.

ANDRÉ MOUTIA,
Assistant Entomologist.

CHEMICAL DIVISION

(A)—Investigational Work

1. *Camphor.*

Samples of camphor oil and crude solid camphor were forwarded to the Imperial Institute for favour of examination; this camphor represented a crude solid product prepared experimentally by this Division from the leaves and twigs of cinnamum camphora trees grown at the Botanical Gardens Curepipe.

The sample of oil was similar in composition to ordinary camphor leaf oil and contained much camphor in solution; after removal of the solid camphor the oil was found to have the following constants :—

Specific Gravity	...	at 15.5°/	15.5°C ...	0.9189
Optical Rotation	...	aD	@ 16°C ...	33.22
Refraction Index	...	nD	@ 20°C ...	1.4754

The amount of cineole in the oil was found to be equivalent to 0.5% of the original oil but the safrole, if any, was exceedingly small.

This local oil was found, however, to differ widely from the commercial camphor oils marketed in the U.K. obtained by the re-distillation of crude camphor wood oil; the so called "heavy" brown camphor oil for instance contains from 25-35% of safrole; like the Japanese "light" camphor oil, local oil could be utilised as a turpentine substitute.

With regard to the crude solid camphor, the present comparatively low price of Japanese refined camphor renders doubtful whether its production in Mauritius would prove very profitable.

2. Mineral Content of Pastures.

The main line of research during the year under review was the investigation concerning local pastures with a view to determining the grassland areas in which mineral deficiencies exist.

Considering that the ecological aspect of the problem is of equal importance, the botanical composition of the grasslands was studied as well in order to determine the individual species constituting the sward of the principal types of our local pastures; this work is the object of Mr. P. O. Wiehé, B. Sc.

Sixty samples of pasture were collected from the different districts and they were obtained, at short intervals, over a period of two months, in order to overcome by a systematic work the many factors such as state of maturity, weather conditions, etc. that affect the composition and feeding value of grasses. In this short résumé the data obtained are briefly summarised and average figures given. A fuller discussion, particularly in regard to the practical significance, will be reserved until further data have been obtained.

The average figure obtained for the gross moisture and ash calculated on dry matter are 73.0%. and 12.0% respectively. The lime (CaO) varies from 0.33% to 1.28%; the nitrogen from 0.62% to 2.56%, the high figure of 5.23% N was obtained for a sample of accacia but this must be considered as exceptional, the phosphorus (P_2O_5) varies from 0.22% to 0.90%.

3. Soil.

A soil investigation was undertaken in order to explain the very poor appearance of a pine apple crop grown on an estate in the Flacq district. A soil survey of the estate indicated that soil erosion has been particularly intense. This region is marked by heavy rainfalls and the slope of the land has increased the rate of erosion i.e. the removal of the surface soil by running water.

It was ascertained that the natural soil profile was destroyed, the layer of soil was thin only 4″ to 6″ overlying a dark red subsoil; on the steepest hillside the raw subsoil was exposed.

The analytical figures are given below:

No. of the field	Ph.	Organic	Nitrogen	Phosphorus (P_2O_5)	Potassium (Exch: K_2O)	Manganese
4	5.6	5.0	0.24	0.0014	0.0018	0.033
9	5.8	4.5	0.23	0.0014	0.0150	0.048
16	5.9	6.0	0.33	0.0006	0.0041	0.075

The P_2O_5 and K_2O figures are very low in consequence of the removal of the superficial layer of soil, the richest in plant food.

The type of erosion noted in this district is beyond human control and a practicable recommendation to improve the land can hardly be made.

4. *Rum.*

The control of rum analysed according to Ordinance 18 of 1933 was performed until the month of March, when this work was transferred to the newly appointed Government Analyst.

5. *Cocaine in Erythroxylacene.*

Two species of Erythroxylacene viz : *E. hypercifolium* and *E. laurifolium* grow wild in Mauritius. The alkaloids were extracted from these plants and the residues obtained were duly tested for cocaine with negative results.

These determinations were carried out at the request of the Secretary of State in view of a Conference of the League of Nations to consider the advisability of limiting and controlling the cultivation and harvesting of the cocoa leaf.

6. *Salt from Rodrigues.*

A sample of salt was received from Rodrigues ; the salting power of the sample was reported to be inferior to the salting power of the salt from Mauritius.

The sample was analysed and found to contain a somewhat high percentage of magnesium chloride which causes bitterness and deliquescence. It was suggested to allow the salt heaps to drain properly for a longer time so as to decrease the amount of water and diminish the percentage of magnesium chloride.

7. *Rain Water.*

Rain water was again systematically collected at different places during the year and analysed accordingly. It is hoped to publish shortly the analytical figures obtained in a tabular form in a departmental Leaflet.

8. *Farmyard Manure.*

In Mauritius, when farmyard manure contains a very high percentage of ammoniacal nitrogen, the usual preliminary treatment with oxalic acid (2 grms. per 100 grms.) was found insufficient to prevent the loss of gaseous nitrogen, the total nitrogen figure was therefore in such cases always too low.

This question was discussed by a committee specially appointed by the Société des Chimistes composed of : Messrs. Baissac, Berchon, Craig, Davidsen, Giraud, Guérandel, Hardy, d'Hotman de Villiers, Olivier and de Sornay and a new analytical procedure was proposed and finally adopted.

9. *Milk.*

The analysis of milk from the Government Dairy was carried out on four occasions during the year. The following figures may be quoted :—

		Specific Gravity @	Total Solids %	Fat %
April	Morning	1029 5	11.65	3.3
„	Evening	1030.1	12.75	4.1
„	Morning	1030.6	11.92	3.3
„	Evening	1029.5	12.60	4.1
July	Morning	1032.3	12.06	2.9
„	Evening	1030.9	14.51	4.7
„	Morning	1030.9	13.15	3.7
„	Evening	1030.6	13.59	4.4
„	Morning	1030.6	12.44	3.4
November	Morning	1029.3	11.91	2.7
„	Evening	1029.7	12.64	4.0
„	Morning	1030.4	13.56	3.4
„	Evening	1029.8	13.02	3.9
„	Morning	1029.3	12.24	3.4
December	Morning	1031.7	12.06	3.6
„	Evening	1030.0	12.90	4.3
„	Morning	1030.0	12.2	3.6
„	Evening	1030.5	13.0	4.6
„	Morning	1029.5	12.1	3.5

As expected, the evening milk is much richer than the morning milk but on the whole the figures are satisfactory.

10. *Castor Oil.*

A certain amount of *Ricinus communis* seeds was forwarded by the Agricultural Division for oil extraction. The seeds were first decorticated and the kernels duly separated, 36.92% of castor oil was obtained by extraction.

(B)—ROUTINE ANALYSES

1. The routine work showed an increase during the year under review due to the fact that the number of samples of fertilizers forwarded by the public has very materially increased.

The following samples were received and examined :

	Samples received	Estimations
Guano mélangé ...	5 ...	21
Lime ...	10 ...	11
Dipping ...	49 ..	76
Phosphatic manure ...	33 ...	38
Fumier ...	57 ...	146
Miscellaneous ...	23 ...	55

2. In addition to the above and in connection with the investigational work, the following determinations were performed :

	No. of Samples	Estimations
Soils ...	18 ...	
Water ...	120 ...	600
Fodders ...	60 ...	500
Milk ...	20 ...	60

(C)—Education

The usual duties in relation to the teaching of chemistry at the Mauritius College of Agriculture were performed by the Assistant Lecturer in Chemistry ; during the absence of Mr. R. Lincoln on leave Mr. P. O. Wiehé. B Sc. was temporarily in charge of the second and third year students.

(D)—Miscellaneous

Mr. L. Fayd'herbe has been appointed temporarily, since August, as Tobacco Analyst and is in charge in the chemical laboratory, of the chemical analysis of tobacco leaf.

During his leave of absence Mr. Lincoln attended the 3rd International Congress of soil Science at Oxford as a Government delegate.

R. LINCOLN,
Chemist.

TOBACCO DIVISION

1. *Tobacco Station. La Ferme.*

The series of manurial experiments with the variety Amarello having been completed in the previous year, it was decided to commence experiments at the Tobacco Station with the primary object of obtaining a variety or varieties with a better flavour. These experiments were rendered necessary in view of the fact that reports received from one firm of brokers in London were to the effect that the flavour of the variety Amarello was such as to render it practically unsaleable on the London Market.

The following varieties were accordingly planted in two series, viz :—first series in Field 2, in April, and second series in Field 3, in September. Harvesting of the second series was still in progress at the end of the year :—

a. Flue Curing trials. Hickory Pryor, Yellow Pryor, Harrison Pryor Resistant, Warne, Hester, White Stem Orinoco, Narrow Leaf Orinoco, Gold Leaf, Flanagan, Adcock and Cash.

b. Air Curing. Joiner, Gold Leaf and the following varieties received from Uganda : Improved Clarksville. Greenwood, Western S. Cash 29 ; and Maryland received from Réunion.

c. Burley trials. White Burley, Station Stand-up Burley, Root Rot Resistant Burley and Judy's Pride Burley, Judy's Pride White Burley and Sweet Burley received from Uganda.

From field notes the following varieties appear to be the most promising:—

Flue Curing. White Stem Orinoco, Flanagan, Adcock, Gold Leaf, Warne, Cash and Hickory Pryor.

Air Curing. All the varieties with the exception of Cash 29.

Burley Trials. White Burley, Station Stand-up Burley, Judy's Pride Burley and Judy's Pride White Burley.

Selected strains of Amarello were distributed to planters during the year and in all cases proved to be better in every respect than the planters' own selection; the strains 852 and 831 being outstanding. The variety Flanagan was also tested on a few estates and proved to be just as good as Amarello from both yield and quality standards.

Fields No. 2 and 3, at the Station were stoned and much improved thereby, increasing the area available for cultivation. All buildings have been kept in a good state of repair and were painted during the year. The area set aside for nurseries was stoned and enlarged.

2. *Black Shank resistance trials.*

Further trials were carried out at Barkly Experimental Station, during the year, with seed obtained from selected plants from the previous trial; seed has been sown for a further trial. These trials are being carried out by the Tobacco Breeding Officer and are dealt with more fully in his report which accompanies that on the Tobacco Warehouse.

3. *Diseases.*

Considerable losses have been occasianed by Black Shank disease (*Phytophthora sp.*) and Granville Wilt (*Bacterium solanacearum* E.F.Sm.) on the majority of plantations.

Mosaic disease was again very severe on certain estates in the Black River and Port Louis districts; isolated cases were also reported from all districts. A hitherto unreported disease was discovered by the Plant Inspector on an estate in the Black River district. The disease is being fully investigated by the Botanist and Mycologist.

4. *Survey.*

A Survey of Tobacco Plantations has been carried out by the Tobacco Breeding Officer with the object of correlating tobacco types with soil types and samples of leaf from all estates have been obtained for chemical analysis. These have not yet been completed but, on completion, will be the subject of a special report.

5. *General.*

Conditions generally were favourable and the quantity and quality of the leaf produced has been up to average in the case of flue cured leaf, whilst the quantity of air cured was above average. Acerage under cultivation was considerably restricted owing to the large stocks held by

the Tobacco Board. During the year a shipment of leaf was despatched to London but was reported to be practically unsaleable owing to its peculiar flavour; it was, therefore, returned.

As usual, the figures relative to acreage under cultivation, production and consumption are dealt with in detail in the annual report of the Tobacco Board.

GEOFFREY CORBETT,
Government Tobacco Officer.

GOVERNMENT DAIRY

1. *Yield of Milk.*

92,339 litres were produced during the year as against 82,993 in 1934. The milk was disposed of as follows:—

	1935	1934
Supplied to Government Hospitals ...	12,893	6,824
Supplied to the Public ...	75,619	72,766
Fed to calves	3,478	3,040
Samples for control	349	363

Of these data, the noticeable feature is the gratifying increase in the amount of milk taken by the public in spite of the fact that the price had to be maintained at 22 cents per litre i.e. about twice the price for the local ordinary milk.

2. *Revenue and Expenditure.*

Revenue

	Rs. cs.
Sales to the Public :	
Milk	16,581 62
Stock... ...	781 00
Manure etc. ...	4,689 40
	22,052 02
Milk supplied to Hospitals ...	2,757 81
Total Rs.	24,809 83

Expenditure

	Rs. cs.
Personal Emoluments	2,220 04
Grain ...	6,632 36
Fodder ...	6,539 64
Litter ...	1,917 00
Salaries ...	3,892 01
Repairs ...	1,834 56
Travelling and Transport ...	2,360 57
Sundries ...	1,138 79
Total Rs.	26,534 97

Profit and Loss Account on Live Stock for the year ended 31.12.35

To	Rs.	By	Rs.
Value of Live Stock on 1.1.35 as per Inventory Book	15,345	Sales during the year ..	781
Purchases during the year		Value of Live Stock on 31.12.35 as per Inventory Book	13,700
		Balance representing loss	864
	15,345		15,345

Profit and Loss Account of the Government Dairy for the year ended 31.12.35

To	Rs. cs.	By	Rs. cs.
Balance from Live Stock Account	864 00	Sales of Milk:	
Depreciation on Plants, Furniture, Fixtures etc.	286 38	Public ... 16,581 62	
Repairs and Upkeep } P. W. D. Deptl.	Nil 1,834 56	Hospitals 2,757 81	19,339 13
Grain and other Stock Feed	6,632 36	Sale of Manure etc. ...	4,689 40
Fodder	6,539 64	Balance	3,736 52
Litter	1,917 00		
Salaries	2,220 04		
Wages	3,892 01		
Travelling, Transport, Milk deliveries ...	2,360 57		
Incidentals, including water etc. ...	1,218 79		
	27,765 35		27,765 35

Balance Sheet as at 31st December 1935

Liabilities	Rs. cs.	*Assets*		Rs. cs.
Accounts payable		Land		6,000 00
Balance ... 87,404 75		Buildings		62,500 00
		Plants, furniture, fixtures, etc. as at 31.12.34 ...	4,968 32	
		Less depreciation during the year	286 38	4,681 94
		Value of Live Stock as per Inventory Book ...		13,700 00
		Food for cattle as per Ledger		451 25
		Accounts receivable ..		71 56
	87,404 75			87,404 75

3. *Births.*

35 births were recorded : 17 females and 18 males. All calves were given the B.C.G. injection at birth, whether they are intended for sale or to be reserved for the dairy herd.

4. *Deaths.*

Two cows died during the year : one from pneumonia and the other from peritonitis.

5. *Sales.*

23 calves were sold to breeders viz : 17 males and 6 females.

The demand for calves of the dairy is as steady as ever and the large number of breeders inscribed on the waiting list, especially for heifer calves, is evidence that the Friesland breed is as highly appreciated in this part of the world as elsewhere.

11 cows were discarded during the year and sold to the butcher.

Of these, 10 had lost their reproductive power owing to old age or otherwise and one had become useless for milk production owing to blindness of teats.

6. *Abortion.*

Twelve cases of abortion occurred during the year as against nine in 1934.

7. *Trypanosomiasis.*

During the period under review the draft bullock of the dairy was found infected with *T. vivax* and was transferred to the Bacteriological Laboratory at Réduit for purposes of quarantine and treatment. The whole herd of milch animals were subjected to frequent and exhaustive examinations throughout the year for the detection of blood parasites; fortunately no positive results were recorded. It should be explained that the draft bullock, which goes to the railway station twice daily and may therefore be contaminated, is not stabled within the dairy compounds ; its hut stands at the extremity of the dairy lands on the roadside ; the animal is harnessed on the road and the cart is brought out and in by hand so as to avoid as much as possible danger of contamination of the herd by flies carried by the bullock.

8. *General Remarks.*

As in previous years, chemical and bacteriological analyses of the milk were carried out periodically. These showed that the high standard of the milk was being maintained.

The annual Tuberculin test gave no positive results.

Y. LEFÉBURE,
Officer in charge.

CO-OPERATIVE CREDIT DIVISION

1. *Administration.*

The Assistant Registrar, Mr. M. Burrenchobay, proceeded on study leave for one month to Colombo, on 31.10.35, according to the wish expressed by the Secretary of State for the Colonies when he was appointed to the post of Assistant Registrar. He has also obtained three months' leave to be spent in India after his study. During his leave, the whole time Inspector, Mr. L. Madhoo, in addition to his ordinary duties, has discharged the duties of Assistant Registrar. In order not to relax any control over the Societies, Mr. G. Bauristhène, Agricultural Instructor, has been re-appointed to act as additional Inspector. Mr. Bedsy continued to act as additional Inspector throughout the year.

2. *Capital.*

The total working capital of the Societies, which last year stood at Rs. 268,665, was this year Rs. 267,156; the small decrease is due to (i) the withdrawal of shares by debtors towards part payment of their debts or whilst writing off such debts, (ii) the repayment of Government loans and (iii) the withdrawal of shares by members having no agricultural interests.

3. *Government Advances.*

No advance from State Funds was made during the year; the amount still due to Government by Societies on 31.12.35 is now Rs. 2,720.

Advances of Rs. 1,200, 1,500, and 20 were respectively held by the New Western, Surinam-Souillac and Trèfles (Rodrigues) C. C. Societies.

4. *Reserve Fund.*

The total reserve fund of the Societies is now 3.5 times the value of the shares originally contributed by the members.

5. *Dissolved Societies*

The same number of dissolved Societies as last year remained, viz: 10. The depression still prevailing in the sugar industry has not enabled the closing of liquidation proceedings in the case of any of these Societies.

6. *Societies, Dividend and Interest.*

The number of the Societies in operation in the Island on 31.12.35 was 29; one new Society, the Lallmatie C.C. Society, was registered during the year after educating the shareholders thereof on sound co-operative lines. Applications for the formation of new Societies have been received from the villages of Gokhoola and La Retraite but they have been postponed for consideration to next year owing to financial stringency.

No dividend was declared by any of the Societies this year on account of the arrears due—a consequence of the severe drought. Seven Societies reduced the rate of interest during the year; so that now 10 Societies are working at 6%, 10 at 7%, 4 at 8%, 3 at 9%, 1 at 10%, and 1 at 12%, i.e. the new Society of Lallmatie.

7. *Loans to members and Recoveries.*

During the last quarter of the year the total loans issued were higher than in the previous year as many agriculturists had to renew their plantations which were damaged by the severe drought; the recoveries have a tendency to improve on account of the good crop realised in 1935. The Societies devote their attention chiefly to the grant of loans for cane cultivation; in a few cases for tobacco and vegetables and in two cases for buying cattle.

8. *General Meetings.*

Extraordinary general meetings of ten Societies were held during the months of March and April; the annual general meetings were held as usual. At these meetings the book of the Societies were closely scrutinised by the Registrar. At the same time the debtors present were minutely examined as to their exact financial position. Letters reviewing the affairs of the Society as well as programmes of work to be executed were prepared and sent to the Societies for fulfilment of necessary action.

9. *Demonstation Plots.*

The demonstration plot at St. Andre is being maintained on a sound basis. With a view to furnishing canes of better varieties by small planters, the creation of demonstration plots has been advised and seven Societies have started at their own expense such plots, viz: Pont Colville, Nouvelle France, Rivière du Poste, Grand Bois, Curepipe Road. Corps de Garde and Sébastopol. The planting materials have been supplied free of charge by the Department of Agriculture.

10. *Amendment of Co-operative Credit Ordinance.*

It is a pleasure to remark that the necessary legislation with regard to the general review of the Rules and certain sections of the main Ordinance governing the working of the Societies has passed the Legislative Council.

Steps are being taken to bring such legislation into immediate operation.

11. *Conclusion.*

In general, the efforts of the staff during the year were directed towards revival and expansion of the movement as well as the improvement of poor Societies. There has been an increase in the number of new members who joined the Societies as compared with last year.

Excessive pressure on debtors has been avoided wherever possible it has been the policy to reduce indebtedness by acceptance of gradual payments firmly insisted upon. Members have been encouraged to openly discuss their affairs when applications for loans were being considered in the presence of the Inspecting Officer.

It is interesting to note that, largely owing to the legal affairs of all Societies having been placed in the hands of a reliable Attorney, two judgments to undergo imprisonment were obtained against debtors who had alienated their holdings as a means of avoiding their financial responsibility towards their Societies.

L. MADHOO,
Acting Assistant Registrar,
Co-Operative Credit Societies.

RODRIGUES

1. CLIMATIC CONDITIONS :—*Rainfall*

Months	Oyster Bay		Solitude		La Ferme	
	Inches	Rainy days	Inches	Rainy days	Inches	Rainy days
January ...	7.72	13	8.14	15	7.13	14
February ...	10.45	17	9.36	18	8.44	17
March ...	2.91	9	4.58	21	3.92	11
April ...	5.57	13	6.75	15	5.02	15
May ...	1.31	8	2.34	11	1.55	7
June ...	1.89	11	2.58	15	1.20	9
July ...	6.26	16	7.22	22	4.81	15
August ...	6.44	11	8 38	16	5.79	11
September ...	1.14	7	1.24	8	.65	9
October ...	7.43	6	6.79	7	8.42	5
November ...	1.40	6	1 53	6	1.58	5
December ...	6.81	8	6.03	13	5.08	8
Total ...	59 33	125	64.94	167	53.59	126

Highest rainfall in one day.

Oyster Bay.	On the 28th October :		6.14	inches
Solitude	„	„	5.14	„
La Ferme	„	„	7.26	„

2. *General Conditions.*

The climatic conditions, at the beginning of the year, were favourable for agricultural operations. The cyclone which occurred on the 31st December 1934 did not cause any damages and resulted in good rain being obtained in January. Vegetation was satisfactory until the months of May and June when a deficiency of rainfall was experienced. This has chiefly affected the tobacco and bean plantations.

The season, from August, was exceptionally favourable and is regarded as the best within the memory of persons who gain their livelihood in Rodrigues from the products of the soil. The rainfall obtained in the latter months of the year proved most beneficial to agriculture. Pasture was abundant throughout the year.

Maize and sweet potatoes have done well and were available nearly all the year round. In some localities three crops of maize have been obtained. A good yield of manioc has been obtained. The occurrence of die-back disease has been less prevalent. Yams, eddoes and tannias are still planted on a very small scale. Just as for manioc, the main factor responsible for the difficulty of the development of their cultivation is that the plantations are constantly visited by thieves. The tubers of these plants taking 5 or 6 months to reach their full development and cannot therefore be watched continuously during such a long period. Maize is guarded for one month prior to harvesting.

The somewhat dry weather conditions prevailing in May and June have badly affected the bean crop, causing a reduction in the yield. The crop was sold at a higher price than last year. Peas have done well, but have been planted on a small scale. Yields obtained from garlic and onions were satisfactory.

The tobacco industry is gradually expanding and farmers are now convinced of the advantages of growing new varieties. The plantations made in January have done well and a very good yield was obtained. Those made later on have met the unfavourable weather conditions experienced in May and June. The amount of leaf exported has, therefore, been below the original estimation.

On the whole, the quality of the leaf this year has been superior to last year's production. One or two growers, who had not acted in accordance with the Agricultural Department advices, obtained most unsatisfactory results. However, the experience is of great value and, in future, there is no doubt that the recommendations will be more carefully followed.

The farmers are slowly extending their coffee plantations and a fair crop has been obtained. There has been a steady demand for the acacia seeds that have been collected nearly all the year round.

The improvement of livestock is showing some progress and breeders are slowly recognising the importance of keeping their best animals for breeding purposes. The best has been made of the blood already introduced but much still remains to be done. His Excellency the Governor, after his visit to Rodrigues, has agreed that stud animals of new breed should be introduced. An amount of Rs. 1,500 has accordingly been voted in November for that purpose. Given a continuation of the above policy, there is every prospect that in some years time the condition of live stock will be more than satisfactory.

The rearing of guinea fowls, introduced in 1933, is progressing. A certain number of birds were exported for the first time this year.

3. *Animal Disease.*

No disease of economic importance was recorded throughout the year.

4. *Disease of Plants.*

Die-back disease was less prevalent on manioc plantations, the disease occurring chiefly in the fields exposed to the wind. Mosaic disease was present on some tobacco and bean plantations. Measures have been taken for the control of the disease.

5. *Activities of the Agricultural Division.*

The buildings, roads, drains and fences of the Agricultural station were maintained in good condition. Uninterrupted efforts were required to accomplish good control of weeds and grass after the intense vegetation promoted by the rainfall obtained during the year.

Experiments were as usual carried out with different varieties of food crops and every information of any value has been delivered to the public. Regular distribution of planting material has been effected. The new variety of maize (South African White) introduced this year is still under test at the Experimental Station. The variety South African Red introduced in 1932 has not proved successful. The variety Mauritius Red, introduced the same year, gave good results and has been propagated. Sweet potatoes, Manioc, Eddoes, Yams and Tannias have been grown and good yields were obtained. Several varieties of beans were introduced and tested. Two of the newly imported ones gave very promising results.

Owing to the regular visits paid by the K.P.M. steamers who are willing to take supplies of fresh vegetables, the possibilities of developing their cultivation have been reconsidered this year. On the whole, the results obtained have been encouraging. Several varieties of vegetables were introduced and some of them have done well.

The fruit trees have done well and many of these, introduced some years ago, have started to bear. A few citrus trees that showed an attack of gumming disease were destroyed and the soil disinfected. Some which were but slightly attacked were treated with lime wash and Bordeaux mixture. The work of propagating by budding and grafting has been carried out. Special attention was devoted to the expansion of the cultivation of Citrus trees. Several varieties of Oranges, Mandarines and Limes were introduced and grape fruits have been ordered. The plantations of coconuts have done well. 312 trees were planted at Quitor, Port South East and Oyster Bay. Although carefully attended to, the coffee plantation is but slowly progressing. Vanilla has yielded well. The plantation has been extended.

6. *Stock Farm.*

The stock farm has continued to work progressively during the year. The bulls were stationed in different herds. To facilitate the crossbreeding with the sows belonging to breeders living in localities far distant from Oyster Bay a boar of the Yorkshire breed has been stationed at Vainqueur.

On several occasions the Rhode Island Red cocks were sent on loan to breeders. A great number of cows, ewes and sows to be sired were also received at the Stock Farm.

7. *Agricultural Instruction.*

Frequent visits were paid to holdings of planters by the Agricultural Superintendent. The importance of soil conservation is now recognised by some of the farmers, but the work to avoid erosion has been very roughly done. Slight improvement is also noticeable in the cultural methods employed in some localities. However, there is still a great number of lands that are being rapidly exhausted owing to bad cultivation. To obtain an improvement of such a state of affairs the establishment of demonstration plots cannot do any great amount of good. The above mentioned lands are in the hands of those farmers who reckon only on favourable weather conditions to obtain a good yield of of food crops and are under the impression that the work which is carried out in the demonstration plots requires a great deal of expenses that Government or rich people can only afford to meet. In the attempt to alter such a conviction and at the same time to prevent further deterioration of big areas of Crown Lands, His Excellency the Governor after his visit to Rodrigues, has granted an amount of Rs. 1,500 to be spent on works of terracing, planting of Vetivert grass (Andropogon sp) manuring etc. *on the holdings of planters themselves, work to be carried out with the assistance of the latter and his family.* An area of more or less worn out lands has been selected. A meeting of the farmers of the locality has been held and interest was shown when the scheme was explained to them.

Satisfactory results were obtained in the school gardens of La Ferme and Lataniers. The children have taken interest in the practical work which was carried out and lectures on Agriculture were delivered to them.

8. *Water Supply*

Special attention has been paid during the year to the Water Supply problem. At the request of the Director of Public Works the Agricultural Superintendent prepared a plan showing the situation and levels of the Rivers Cascade and Bambou, from Port Mathurin to the existing dams on these rivers.

The Irrigation Engineer visited Rodrigues in October. A suitable site in Cascade River Valley has been selected by him for the building of a concrete dam with a storage capacity of 795,000 gallons of water. The Agricultural Superintendent was requested to take charge of the work that is being carried out since November. The storage reservoir will be ready for use early in 1936. The reservoir of Crève Coeur has been also thoroughly repaired.

9. *Importation of Plants*

Importations of plants, fruits etc. have been regularly examined. On several occasions, packages of vegetables that arrived in a decayed state or found to contain insects were destroyed.

10. *Exports*

	1935	1934
Acacia seeds	10,764 bags	7,429 bags
Beans	650 „	896 „
Maize	3,036 „	2,198 „
Garlic	489 „	534 „
Onion	48 „	42 „
Peas	7 „	2 „
Pumpkins	40 „	51 pieces
Tobacco	106 bales	107 bales
Salt Fish	2,241 „	3,002 „
Octopus	410 „	...
Hides	3 „	3 „
Salt Fish and Octopus ...	1,985 „	...
Timber	75 pieces	14 bundles
Manure	320 tons	975 tons
Guano	70 tons	...
Cattle	366	731
Pigs	2,097	2,172
Goats	3,359	3,511
Sheep	478	677
Goats and Sheep ...	902	219
Fowls	1,767½ dozen	24,072
Turkeys	283	199
Ducks	66	...
Guinea Fowls... ...	25	...
Dogs	4	16

11. *Visits.*

The Agricultural Station was visited this year by His Excellency the Governor, The Honourable Dr. Kirk, the Director of Medical and Health Department and Mr. Stanislas Pelte, the Irrigation Engineer of the Public Works Department.

12. *Receipts.*

The miscellaneous receipts from the Agricultural Station amounted to Rs. 439.33. In these figures is not included the vanilla which has been sold in Mauritius.

RENÉ JAUFFRET,
Agricultural Superintendent.

PART III

1. *Staff movements*

Mr. A. Valasois, Assistant Agricultural Officer, returned from foreign leave of absence on the 19th January and resumed duty on the 18th February.

Mr. R. Lincoln, Chemist, proceeded to Europe on leave of absence on the 11th March. During his absence Mr. F. Berchon, Assistant Chemist, acted as Chemist. Mr. Lincoln returned from leave on the 25th November.

Messrs. R. Avice, Assistant Sugar Technologist, and P. Halais, Scientific Assistant, Sugarcane Research Station, left for Europe on leave of absence on the 11th March. They resumed duty on the 9th December and 25th November respectively.

Dr. H. Evans, Physiological Botanist, Sugarcane Research Station, and Mr. A. Moutia, Assistant Entomologist, also proceeded on European leave of absence on the 24th March and 30th April respectively. They returned from leave on the 9th December and 25th November respectively and resumed duty immediately.

Mr. P. Regnard, second Phytalus Officer, who had been seconded for mission in Madagascar in connection with Phytalus parasites last year, returned to Mauritius on the 13th June.

Mr. D. Ramphul, Overseer, died on the 24th June. Mr. H. Julien, an ex-student of the Agricultural College was appointed to the vacant post on the 1st October.

Mr. M. Burrenchobay, Assistant Registrar Co-operative Credit Societies, was granted study and vacation leave to be spent in Ceylon and India respectively. He left the Colony on the 31st October.

2. *Stations*

The headquarters, offices and laboratories of the Department of Agriculture are located at Réduit some 1,000 feet above sea level. The following principal areas of land are utilised and controlled by the Department for experimental field work in all its various phases:— Réduit, 32.81 arpents; Barkly (altitude 700 feet) 13.7 arpents; Mon Plaisir, Pamplemousses (altitude 220 feet) 9.62 arpents; La Ferme (altitude 420 feet) 12.82 arpents. A number of minor areas in different parts of the Island are leased or occupied rent free for experimental work principally in connection with sugar and tobacco. The local "arpent" is slightly greater than the English acre.

3. REVENUE AND EXPENDITURE

REVENUE

Department of Agriculture	Rs. c.
Sale of Plants	2,587.90
„ Sugar cane	3,092.97
„ Tobacco leaf	1,610.61
„ Pine apples and Pineapple suckers ...	284.41
„ Soamin	12.00
„ B. C. G. Vaccine	1,271.00
„ Produce from Government Dairy	24,809.83
„ Pois Mascat	4.50
Contribution from Co-operative Credit Societies ...	750.00
Analytical fees	649.00
Miscellaneous	437.58
Contribution from Agricultural College Funds towards cost of Sugarcane Research Station	18,000.00
Contribution from Agricultural College Funds towards salaries and allowances of Officers of the Department of Agriculture	23,450.00
Contribution from Agricultural College Funds towards pension of lecturers at the Agricultural College ...	6,210.00
Special cess on sugar exports for Phytalus destruction (Ordinance No. 38 of 1933)	69,961.08
Total Rs.	153,130.88

EXPENDITURE	Rs. c.
Personal Emoluments	227,423.11
Maintenance of Gardens	7,036.79
Incidental Expenses	924.60
Prevention of Plant Pests and Diseases	1,173.53
Prevention of Animal Diseases	704.52
Upkeep of Stock	1,027.54
Travelling Expenses	12,519.28
Maintenance of Experiment Stations	15,030.23
Apparatus, Chemicals and Laboratory Supplies ...	2,117.70
Nursery for the distribution of Economic Plants ...	2,972.10
Destruction of Phytalus Smithi	65,672.14
Services rendered by the Railways	2,275.10
Telephone Charges	515.95
Registration of Agricultural Chemists	6.80
Upkeep of La Ferme Tobacco Experiment Station ...	5,019.76
Passages	7,927.71
Government Dairy	26,534.97
Representation of Colony at Conferences abroad ...	555.51
Study leave to Assistant Registrar Co-operative Credit Societies	88.50
Additional charges on purchase of typewriter ...	1.50
Sugarcane Research Station :—	
Contingencies	446.08
Laboratory Equipment	2,513.38
Travelling Expenses and Services rendered by the Railways	1,671.34
Labour and Field Equipment	9,018.27
Total	Rs. 393,176.41

The receipts and expenditure shown above are in respect of the Calendar year 1935. The official financial year in Mauritius runs from July 1st in one year to June 30th in the following year. The pound sterling is equivalent at present to Rs. 13 33.

4. *Legislation*

The following Ordinances, Proclamations and Notifications were issued during the year :—

Proclamation No. 5 of 1935.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of "The Lallmatie Co-operative Credit Society."

Government Notification No. 20 of 1935.—Regulation made under article 16 of the Animal Diseases Consolidated Ordinance 1925, as amended by article 2 of the Animal Diseases (Amendment) Ordinance 1930.

Government Notification No. 41 of 1935.—Rules made under article 31 of the Co-operative Credit Societies Ordinance 1913, as subsequently amended, amending the Rules in respect of Co-operative Credit Societies.

Ordinance No. 26 of 1935.—To amend the Co-operative Credit Societies, Ordinance 1913.

5. *Board of Agriculture*

The Board of Agriculture established under Ordinance 30 of 1912 consisted of:—

His Excellency the Governor—President.
The Director of Agriculture—Vice President.
The following members were appointed for 1935 :—

The Hon. M. Martin, C.B.E.	Mr. L. H. de Froberville
„ J. Leclézio, C.B.E.	„ H. G. Ducray
„ P. Montocchio	„ Louis Larcher
„ R. Gujadhur	„ Pundit Bolaram
Captain H. C. Hitchcock, O.B.E.	„ Pierrre de Sornay, Chev. Leg. Hon.
Mr. R. M. Monk	
„ Tristan Mallac	„ F. A. Nichols
„ G. Antelme	„ H. Lincoln
„ G. Clarenc	„ Pierre Hugnin.

6. *Publications*

The following departmental publications were issued during the year :—

Bulletins. (*a*) Parasites rencontrés chez les animaux à Maurice.
(*b*) Termites in Mauritius.
(*c*) Sugarcane Research Bulletin No. 7. Investigations on the course of growth in a virgin, or plant of sugar cane.
(*d*) Sugarcane Research Bulletin No. 8. The maintenance of first year characters in new sugar cane clones.
(*e*) Sugarcane Research Station No. 9. Base exchange relationships in Mauritius soils.

Leaflets. (*a*) Methods of avoiding damages when handling tobacco leaf.
(*b*) Notes on the Litchi cultivation.
(*c*) Notes sur le nouveau moyen de lutte contre le pou blanc ou Icerya Seychellarum.

Reports.—(*a*) Annual Report of the Department of Agriculture for 1934.
(*b*) Report on the Operations for control of Phytalus Smithi Arrow for the season 1934–35.
(*c*) Report on the working of the Co-operative Credit Societies for the year ending 30th June, 1935.
(*d*) Report on the College of Agriculture for 1934.
(*e*) Fifth Annual Report on the Sugarcane Research Station for 1934.
(*f*) Final compilation of sugar production for the 1934–35 campaign.
(*g*) Preliminary forecast of the 1935 sugar crop.
(*h*) Revised forecast of the 1935 sugar crop.
(*i*) Preliminary compilation of sugar production for the 1935 sugar crop.

The following articles from Officers of this Department were published in the Revue Agricole :—

1. L'Extraction aux Moulins by R. Avice.
2. Un nouvel indice de climatologie agricole by P. Halais.
3. Notes sur les Coléoptères des Iles Mascareignes by J. Vinson.
4. Concerning certain aspects of manurial trials in Mauritius by N. Craig, M. Sc.
5. A note of the nature of the underground stems of Sugar cane by H. Evans, Ph. D.
6. Etude sur le système radiculaire de la canne à sucre à l'île Maurice by H. Evans, Ph. D.
7. Un essai préliminaire sur la résistance des variétés de cannes à l'attaque du Phytalus by W. F. Jepson, B. Sc., and H. Evans, Ph. D.
8. Résumé des travaux faits en 1934 à la Station de Recherches sur la Sélection de la canne à sucre by A. Glendon Hill.
9. Résumé du Rapport du Bio-Chimiste, Année 1934 by N. Craig, M. Sc.
10. Résumé du cinquième Rapport Annuel by H. Evans, Ph. D.
11. Les caractères du système radiculaire de la canne à sucre by H. Evans, Ph. D.
12. Le comportement des variétés P.O.J. 2878, P.O.J. 2727 et B.H. 10 (12) à Maurice by A. Glendon Hill.
13. Conservation des graines de cannes by A. de Sornay.
14. La canne P.O.J. 2727 by A. Glendon Hill.
15. Les sols arrivés à maturité des districts pluvieux de l'île Maurice by N. Craig, M.Sc.
16. Le cours de développement du système radiculaire de la canne en vierges by H. Evans, Ph. D.
17. The development of Biological control of Insect Pests with special reference to some current experiments by W. F. Jepson.
18. Le développement du système radiculaire de la canne en repousses by H. Evans, Ph. D.

7. General

The Director of Agriculture served as a member of the Council of Government. He acted as Chairman of the Agricultural College Board, the Phytalus Advisory Committee, the Tobacco Board, the Allotments Organisation Committee and the Agricultural Section, Bi-Centenary Exhibition Committee. He also served on the following Boards and Committees :—the Board of the Mauritius Institute, the Forest Board, the Mauritius Hemp Producers' Syndicate (Executive Committee), the Stock Breeders' Association, the Finance Committee and the Fisheries Permanent Advisory Committee.

The Department of Agriculture played a prominent part in the Exhibition which was held in celebration of the Bi-Centenary of the town of Port Louis. A graceful and imposing structure was erected within the grounds of the Exhibition and in it were housed all the exhibits of the competitors in the various classes of agricultural produce. The Sugarcane Research Station and the various Divisions of the Department staged interesting displays which portrayed the role of science in modern agriculture. The general public evinced great interest in this particular Section of the Exhibition and comment was general on the excellence thereof.

APPENDIX

MEAN MONTHLY RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE STATIONS UNDER THE CONTROL OF THE DEPARTMENT OF AGRICULTURE, MAURITIUS

Stations	Central Experiment Station. Réduit								Barkly Experiment Station Beau Bassin					Abercrombie Nursery Port Louis					Botanical Gardens Curepipe		Botanical Gardens Pamplemousses	
Elements	Air Temperature			Relative Humidity	Rainfall		Sunshine		Air Temperature		Relative Humidity	Rainfall		Air Temperature		Relative Humidity	Rainfall		Rainfall		Rainfall	
Months 1935	Max. °C	Min. °C	Mean °C	%	Depth of Rain mm.	No. of days of Rain	Hours of Sunshine	% of possible	Max. °C	Min. °C	%	Depth of Rain mm.	No. of days of Rain	Max °C	Min. °C	%	Depth of Rain mm	No. of days of Rain	Depth of Rain mm.	No. of days of Rain	Depth of Rain mm.	No. of days of Rain
January ...	27.9	21.3	24.3	71.8	342.5	25	244.6	60.0	29.6	21.9	68.8	278.3	17	31.9	23.3	59.6	236.8	19	475.2	29	309 0	19
February ...	27.7	22.3	24.4	79.1	376.7	26	204.2	57.3	29 3	22.5	75.4	322.7	21	30.4	23.8	69.6	337.8	21	628.2	26	558.5	24
March ...	27.3	21 9	24.0	74.0	146.5	26	241.3	63.9	29.5	21.4	69.5	104.3	15	31.1	23.2	64.1	82.9	13	367.2	30	137.5	16
April ...	25.8	20.9	22.8	79.7	427.8	26	161.4	46.4	28.2	21.2	79.6	299.0	25	...	22.0	71.1	386.8	21	834 5	28	558.5	20
May ...	23.9	18.2	20.4	76.2	54.8	22	242.3	70.2	26.5	18.7	62.1	45.3	9	...	19.8	62.7	21.1	5	201 5	31	40.5	8
June ...	22.2	17.5	19.3	78.5	93.3	26	176.4	53.9	24.2	17.4	68.5	54.0	16	26.0	20.2	67.5	63.2	12	303.0	30	195.2	29
July ...	20.6	15 2	17.5	73.5	103.0	27	221,3	64 9	21.7	15.4	76.6	39.2	17	24.9	17.9	68 8	43.0	13	512.0	30	130.0	21
August ...	22.4	15.1	18.4	67.9	52.3	24	250.1	70.8	23.0	15.6	70.5	32.9	8	26.7	17.3	64.9	9.2	6	110.5	30	82.5	10
September ...	22.5	16.3	18.9	65.1	53.4	25	222.0	62.0	24.4	16.5	66.4	17 8	6	26.9	18.9	56.6	23.0	13	176.0	27	60.2	14
October ...	24.4	16.9	20.4	57.7	28.3	18	266.2	68.7	27.1	16.7	67.5	13.5	8	29.1	19.5	52.6	18.0	4	93.2	28	42.8	12
November ...	25.7	19.7	22.1	69.6	214.1	27	187.9	48.2	29.3	19.8	83.1	216.2	22	29.1	21.1	64.3	108.7	20	413.3	30	211,0	22
December ...	27.3	20.8	23.6	66.8	207.1	22	239.5	58.2	30.7	20.7	68.2	149.6	18	31.7	23.0	59.2	74.4	15	348.0	27	105.8	15
Means ...	24.8	18.8	21.4	71.7	2099.8 Totals	299	2657.2 Totals	60.4	27.0	19.0	71.4	1,572.8 Totals	182	.....	20.8	63.4	1404.9	162	4462.6	346	2431.5	200

REMARKS.—Air temperature at Réduit is obtained from hourly measurements of thermograms standardized daily at 9 h. and 15 h. Relative humidity is obtained from observations of dry and wet bulb thermometers at 9 h. and 15 h. Sunshine from a Campbell-Stokes Sunshine recorder. Rainfall is measured daily at 7 h. At other stations, maximum and minimum, dry and wet bulb thermometers are read daily at 9 h. and 15 h. and rainfall measured at 7 h.